

EPIDEMICS AND QUARANTINE:

A LECTURE,

INTRODUCTORY TO THE

WINTER COURSE,

AT THE

NEW YORK MEDICAL COLLEGE,

FOR THE SESSION OF 1855-6.

BY HORACE GREEN, M.D., LL.D., &c.,

President of the Faculty, and Professor Emeritus of the Theory and Practice of Medicine.

(PUBLISHED BY REQUEST OF THE CLASS.)

NEW YORK:

EDWARD P. ALLEN, 9 SPRUCE STREET.

1855.

NEW YORK MEDICAL COLLEGE, Oct. 18, 1855.

DEAR SIR:—At a meeting of the medical class of the New York Medical College, held Oct. 17th, the undersigned were appointed a committee to solicit for publication your introductory address, delivered before the Faculty, Trustees, and Students, at the opening of the present collegiate course.

In behalf of our classmates we present to you our most hearty thanks, trusting that you will cheerfully comply with our request, and allow your elaborate production to become the property of your class and the medical profession at large.

With sentiments of high regard, we remain your friends and pupils,

G. T. DOUGHERTY, *Chairman*.
EDUARD M. DEEY,
JOHN J. LINSON,
JOHN J. MITCHELL,
J. HENERY JOHNSON,
S. R. ELLIOTT.

To Prof. HORACE GREEN.

NEW YORK, Oct. 23d, 1855.

GENTLEMEN:—My introductory lecture—a copy of which you have done me the honor to request for publication—was prepared for the class of the New York Medical College; I shall therefore submit it to their disposal.

Please present to the medical class, and accept for yourselves, gentlemen, my thanks for this consideration, with the assurance of my best wishes for their and your individual welfare and happiness.

HORACE GREEN.

To MESSRS. G. T. DOUGHERTY, E. M. DEEY,
J. J. LINSON, J. J. MITCHELL, J. H.
JOHNSON, S. R. ELLIOTT, Committee.

A LECTURE,
INTRODUCTORY TO THE
WINTER COURSE,
AT THE
NEW YORK MEDICAL COLLEGE.

MR. PRESIDENT: Since the inauguration of this Institution, I have had several opportunities, at the different gatherings of our classes, to appear before you as the orator of the occasion. What I have already done in this way should have sufficed for the present. But a few weeks ago, at a meeting of my obliging colleagues, this honor of giving the opening address of the present Session was again conferred upon me. Remembering, however, that those subjects which ordinarily go to compose *Introductory Lectures*, like the raw material out of which "Fourth of July Orations" are manufactured, had long since been exhausted, I most respectfully, and, as I thought, positively, declined the honor. But neither declinature nor demurrer, on my part, availed me anything; for, although duty unfulfilled had strong claims for this labor upon each of these delinquents, yet having determined individually to reject her

claims, they resolved collectively to impose the task upon another. Outnumbered after this manner, I thought to appeal to our Trustees, or to bring my case before the Censors of our College, but reflection often evinces wisdom, and it brought me to the conclusion, that the gathering together of our worthy Trustees, enough to form a *quorum*, would give me more labor than it would to write an introductory lecture; and, inasmuch as our excellent Censors had never hitherto reversed a single decision of the Faculty, I had no confidence they would do it in my own case; at least, I did not desire, on account of our graduating classes, to have a precedent of this kind established. I therefore assumed the task, with as good a grace as I was able; and, should I fail, in its performance, to meet your expectations, let your displeasure fall on those who "knew their duty and yet did it not."

After all, gentlemen of the class, one part of the duty which has been assigned me is certainly most agreeable—that of welcoming you to this Institution consecrated to Medical Science. Those of you who, as former members of our class, return to us again, we welcome as tried friends, even as members of our own family; and we pledge our continued and undiminished interest in whatever concerns the prospects and happiness of each and all of you. To those who come as strangers, and for the first time, to join our class, who, it may be, have left home, and friends, and familiar scenes, to find yourselves amid the solitudes of a great city, surrounded by strange sights and scenes, and yet stranger faces—to you we tender a cordial salutation. For you, we confess to a more than ordinary feeling of kindness and interest; for we remember—after more than a quarter of a century—the day, though it were but yesterday, when, after journeying many hundred miles from our father's house—not with locomotive speed, but with the stage-coach diligence of those days—we entered a distant town, and enrolled our name among the matriculants for a first course, in the old University of the city of Penn; and well do we remember the feelings of sadness, and of home-longings, which for a time oppressed us, and how gratefully we received the first manifestations of interest in our welfare that came from our kind preceptors.

To all of you, then, gentlemen, whether you come as old friends or new, from whatever portion of our wide and happy country, you come to us,—to all I am authorized to proffer a sincere and heartfelt welcome, and to pledge the exercise of our watchful regard over whatever concerns your present and future welfare. “*Accipe daque fidem!*”

It may possibly be recollected by some now present, that, in an address which I had the honor to deliver, a few years ago, on one of these public occasions, it was maintained that the “future progress of medicine in America” is certain and inevitable. That because of our peculiar national characteristics; because of our “commercial and eclectic character;” and particularly because of the freedom of our profession from “governmental restrictions,” the medical art is destined to make unequalled advances in this country; and that the day is yet coming when we shall not only have returned an equivalent for all we have received from the professional savans of Europe, but shall, moreover, in our turn, take the lead in the progressive march of the Science of Medicine.

Brief as the period has been since the above prediction was uttered, yet, were it necessary, it could be shown by a reference to our progress in Operative Surgery, in Therapeutics, and in Practical Medicine, that the day of its fulfilment had already dawned. It is to prepare you, gentlemen, to act well your part in this great, this glorious work of benevolence—it is to enable you yet to contribute your share in the advancement of our noble profession, that you are gathered in this Institution; and whilst we urge you all “to give yourselves wholly to this work,” we place at your disposal, not only the entire advantages connected with our school, but we proffer for your assistance all the aid we have in our power to bestow.

It is at the commencement of our intercourse, as pupils and instructors, that we desire to impress upon each and every one of you the paramount importance of obtaining a thorough medical education; for, in whatever estimation we may be held by the superficial and unreflecting portion of the world, still it remains true that with the members of the medical profession rest obligations, in connection with the causes of disease, with epidemic influences, and with sanitary regulations, of the

utmost weight and importance—obligations which you will be called upon to meet, and in the intelligent and faithful discharge of which are involved, not only the lives of individuals, but often immunity from wide-spread and wasting disease, and the consequent prosperity and happiness of entire communities and nations !

I have alluded to a dearth of topics—such, I mean, as we might infer would be sure to interest the individuals who ordinarily compose a mixed assembly. And yet there are many subjects which have an intimate relation with Medical Science, in the discussion of which the entire lay community have, or ought to have, an absorbing interest. You, gentlemen, have congregated in these Halls for an important, a noble purpose ; but whilst it is for a specific object, it is also one with which is intimately connected the best interests of suffering humanity !

Who then in this assembly, whatever their age or condition, whatever their profession or their occupation, can be indifferent to those subjects which belong especially to the domain of Medicine—subjects “ which not only concern personal feelings and social happiness, but which involve the well-being of society at large, and the intellectual as well as the physical character of individuals and nations.”

I shall be pardoned, then, by this intelligent audience, I am sure, if I occupy the remainder of the time allotted to me this evening in noticing a few of the important topics which are to engage our attention in the course of medical instruction on which we are about to enter.

In Grecian Mythology, from the same source came light and health. Phæbus Apollo, the same Olympian divinity who diffused the one, dispensed the other. At the present day, wherever Medicine has made its greatest attainments, there its beams of truth have been the most universally diffused. Seeking in its glorious aim, not only to relieve the pains of suffering humanity, and ultimately to eradicate disease, it has also offered to every one a participation in the highest good, and has sought to shed its light, and to bestow its truths as the common patrimony of all mankind. And hence we claim this for our art, that in whatever country Medicine has made the

greatest progress, whether it has been in Egypt, in Ancient Greece, or amid more modern nations, there science and civilization have also reached their highest culmination.

But here I may be met by the pretentious assertion, one which is frequently made by the arrogant and unreflecting that we cannot claim for Medicine the attributes of a true science. It is not my intention to occupy your time in establishing the claims of Medicine to be regarded as a science, by arraying the mass of evidence which may be gathered from our minute, thorough, and comprehensive knowledge of *Anatomy*, *Physiology*, and *Pathology*, although by reason of these our attainments, we may always demand for Legitimate Medicine a place among the inductive sciences, because Medicine is a science founded on certain well-established and immutable truths, which elementary branches are of themselves distinct sciences. Not by an exhibition of these truths, I repeat, shall I seek to sustain our claims, but rather by pointing out a few of the discoveries which Medicine has made, with regard to the *causes of disease*; *the mode in which these causes act in producing disease*; *and the methods of their removal or prevention*. In this way shall I be able, I trust, not only to communicate information that may be valuable to all, but to prove, inferentially at least, that to Medicine belong not only the characteristics of an exact science, but also the attributes and dignity of a divine art.

By a reference to the great mass of medical facts already collected, which relate to the origin, cause, and modes of propagation of disease, it will be found that among these causes are some which are especially efficient and wide-spread in their influence. Among them are the *specific poisons*, which engender those maladies ordinarily denominated *contagious diseases*, and *epidemic influences*, or what Sydenham designated the general epidemic constitution of the air. There exist various local causes, some constantly present, others occurring from time to time, which unite in producing and diffusing disease; but a review of the whole of this subject would far exceed the limits of a brief address, and is therefore inadmissible under the present circumstances. In considering, however, these two important agents of disease to which I have

just alluded, facts with regard to some of the laws of contagion, and of sanitary reform or measures, will be noticed, a knowledge of which is of vast importance to both professional and lay communities.

In pursuing this investigation, I shall aim to establish the following propositions :

1st. That all contagious diseases have their origin in a specific poison, which poison is formed in the living fluids of the body.

2d. That endemic diseases arise principally from local causes—causes over which man ordinarily has control ; that they are not necessarily contagious, but, under certain circumstances, are capable of becoming intensely contagious.

3d. That epidemics arise from some general atmospheric or telluric cause, or from causes emanating from both these sources ; that they are governed by some unknown laws, and are never contagious ; and, finally, by establishing these propositions, I shall seek to prove that the employment and maintenance of all sanitary cordons and quarantine regulations (except so far as regards the isolation of the sick affected by known contagious diseases) are utterly absurd, injurious, and oppressive, and are wholly inoperative to prevent the introduction and diffusion of disease.

Few questions connected with Medicine have been more widely discussed than the subject of contagion, and it is not to be denied that a “very great, and apparently irreconcilable, difference has long existed among medical men regarding the exact amount of influence exerted by contagion in the propagation of disease.”

The important discoveries which have been made recently in Organic Chemistry, the amount of positive knowledge which has been acquired in relation to the chemical compounds of the living organism, and the nature of those morbid chemical actions which influence the decomposition of organic bodies—all these, by putting us in possession of a large mass of scientific facts, have served to unite opinions, and to enable us to reason more correctly on this subject than at any former period.

That we may the more perfectly understand this subject, to

which for a brief period I ask your attention, let us for a moment consider, that every human body consists of a mass of organic elements, or chemical compounds, produced and controlled by certain vital affinities. These various organs and tissues of the body constitute the most beautiful specimen of mechanism, the most perfect combination of power, and the finest development of action, presented by the physical world. All the functions and chemical affinities of these organs are carried on, modified, and entirely sustained by that mysterious agent termed *life*. So long as this vital force is in operation, its action is not only constantly opposed to decomposition and organic change in the living body, but whenever any virus, or cause of disease of any kind, is by any way introduced into the system, a vital action, which we term fever, is set up to oppose and prevent the effects of the morbid agent, and to expel it from the system. Let, however, this influence of life which so preserves and controls the vital elements and organic compounds of our frames, be withdrawn, and decomposition and structural change commence at once, in all the organs and tissues of the body, and our vital organisms are resolved back into their primary elements. Recollecting these facts, then—first, that every living body is a perfect chemical laboratory, in which vital actions, affinities, and combinations are being constantly performed; and, secondly, that any variation from the perfect performance of these vital actions, or functions, constitutes disease, and is an interference, more or less, with the chemistry of life,—bearing in mind, I say, these facts, we shall be able better to understand what contagion is, and to comprehend how the introduction of any contagious matter into the system, may prove a decomposing agent, which shall become active on the organism and give rise to the actual formation of compounds in the blood that are incompatible with life, and which must either be removed, and their action arrested, or must go on increasing till life is overcome.

The principle to be apprehended with regard to contagion, then, is this :—The blood is a compound fluid, containing special materials, on which alone the several specific poisons have power to act. Most of the contagious diseases, therefore, are produced, and are perpetuated, by a specific virus which is

formed originally in the living blood. This virus, thus formed, on being introduced into the blood of a healthy individual, will meet with the same material as that of which it is composed, and will therefore be there reproduced, and in this manner contagious diseases may be infinitely propagated.*

This morbidic poison or cause of disease may be communicated to others by direct contact, or the effluvia arising from the bodies of the sick may be inhaled through the medium of the atmosphere, and thus find its way, through the lungs, into the circulation. In whichever of these ways the poison is introduced into the blood, it there finds in this fluid a special material on which the virus is capable of inducing its own peculiar action and of producing in the system the same form of disease as its own. A person thus subjected to this morbidic action, and having once undergone the disease, is, as a general rule, secured against a second attack. Among the diseases which are indisputably contagious are the *exanthemata*, or eruptive diseases, such as small-pox, scarlatina, measles, and typhoid fever, together with hooping-cough, hydrophobia, and a few others. "Experience has proved," says Charles Wm. Bell, "that the special materials on which alone the several specific poisons have the power to act, though unknown as to their exact nature, are various, and frequently finite in the system; that the portion of the system capable of being so acted upon is generally of limited quantity, and not essential to existence, and that when once converted to a new and different condition and expelled, it is not, for the most part, again reproduced."†

Leibig, in his "Organic Chemistry," has partially defined the action of specific poisons in producing disease, in these words. He says: "If the exciter" (to chemical action) "be able to impart its own state of transformation to *only one* of the component parts of a mixed liquid, its own reproduction may be the consequence of the decomposition of that body."

* The term *Contagion* was formerly restricted to the communication of disease by direct contact; and *Infection*, to that by effluvia arising from the bodies of the sick, and communicated through the medium of the atmosphere. As the same result occurs in both cases, the introduction of the specific poison into the system, the terms are now considered synonymous.

† Trans. of the Provincial Med. and Surg. Asso., Vol. xvii., p. 8.

By a more familiar illustration (one which Mr. Bell and others have employed*) the action of specific poisons in the system may be understood if we recall the effect which is produced in a saccharine solution, containing a small proportion of mucilage, by adding to it an active ferment. Fermentation being induced, the gluten is acted upon, atom by atom, till the whole has been converted into new ferment. This accomplished, further fermentation ceases for want of material to act upon. The parallel of this with eruptive contagious diseases, as small-pox, scarlatina, &c., is exact. When an atom of the virus of any of these diseases is introduced into the blood of a healthy system, all the morbid material it contains is converted into its own condition, and the production of fresh virus only ceases after all that this exciter has power to act upon has been consumed. But, further, if a small portion of the gluten that is undergoing transformation be transferred from the first solution to another similar one, it will propagate the same action to all the gluten it contains; and so will a small portion of the virus thrown off from the blood of one person, and absorbed into that of another, propagate its action to all the *materies morbi* that is present in that body.

With regard to the primary origin of contagious disease, for all specific diseases must have arisen from some cause, at some period of time, however remote, Sir Gilbert Blane says: "There is not a secretion or exhalation of the human body which may not be so vitiated as to produce diseases communicable to others by contact or respiration, under fortuitous circumstances of combination, &c. So that there may be more maladies awaiting our species, which are still to develop themselves, under the endless combinations of the incidents of human life, through endless ages to come." In the history of Medicine, no fact is better understood than this, that some diseases of ancient times have become extinct, whilst others, whose existence was before unknown, have made their appearance since the dawn of Medical Science.

Until the middle of the sixth century small-pox was utterly unknown in the Western World, although it is well ascer-

* Ibid., p. 9.

tained that it existed in Asia, and especially in China, for an incalculable period before this scourge was known in Europe. Here, at length, it was introduced by the wild tribes, from the plains of Tartary, who added this evil to the devastation spread by their arms over the most civilized portion of the earth. "History," says Mr. Bell, "almost forces upon us the conclusion that, of all the myriads throughout the world who have suffered from this disease, not one has been so affected but by the propagation of new germs from the original virus, produced in the body of some ancient inhabitant of China, centuries before the disease was even heard of in Europe."

We can now understand, I think, the nature, the *modus operandi*, although we cannot comprehend the magnitude, of the blessing of the wonderful discovery of Jenner.

During a period of more than twelve centuries that leathsome and fatal disease, small-pox, had been committing its ravages throughout all Europe. About one-twelfth of the population of the globe had been, during these centuries, either destroyed, or deprived of their health, or disfigured, by this plague. In Great Britain alone, forty thousand persons died annually of this malady. But in 1796, a young physician of England, by adopting a course of careful, scientific inquiry, collected observations which led to a discovery that has already conferred untold good upon the human race, and has given immortality to the name of its author! This discovery of Jenner is a perfect illustration of the agency of a specific virus on its special material. Here a poison originating in the human system, but modified by passing through the constitution of the cow, is capable of exerting on that morbid material which exists universally in the blood of man, and upon which the small-pox virus, when communicated to the system, exerts its power, is capable, I say, of acting upon it in such a manner as to neutralize it, or expel it from the system, and thus, in a great measure, to render innocuous the contagion of small-pox. And this is only one of the glorious triumphs of our art. This discovery, like the Minerva from the head of Jove, sprung at once, perfect and efficient, from the studies and experiments of its great discoverer! The health and life of millions are preserved through its agency, without sacrifice of pain or privation.

And yet how was this discovery—than which, of all the blessings that have ever been bestowed by man on man, none has proved greater or more important—how was this discovery hailed by his professional confrères and the educated public? During all of Jenner's investigations, and these were continued for several years before his discovery was perfected and admitted, he received no aid whatever from his medical brethren. Indeed, in all his inquiries he was met only with opposition and ridicule, for, as his biographer has stated, having brought the subject frequently before the "Medico-Convivial Society," of London, to which Jenner belonged, it was at last *voted a bore* by the members of that society. And when at length he had succeeded, by introducing into the blood of an individual a small portion of the vaccine virus, in reproducing the disease in the human system, and was preparing to test its protective powers by innoculating his patient with small-pox matter, at this stage of his labors he was not only trembling for the result, but shrinking with nervous anxiety from the anticipated jeers of his professional brethren, should he fail in the trial, for at this period he thus communes with his friend Gardner: "Should anything untoward turn up in my experiments, I should be made, particularly by my medical brethren, the subject of ridicule, for I am the mark they all shoot at."

But the members of the medical profession were not the only opponents of Jenner, or of innovations in medical practice. Sir James Johnson, in his review of the life of Jenner, asserts that Ehrmann, a divine of Frankfort, attempted to prove from quotations of the prophetic parts of Scripture, and the writings of the Fathers of the Church, that vaccination was nothing less than Antichrist! Whilst another learned divine of the Church of England, in the eighteenth century, preached a sermon in London against inoculation, wherein he claimed priority for this discovery for one who has never been considered a regular member of the profession, for this learned divine publicly declared that inoculation was no new discovery, inasmuch as Job, he asserted, was first inoculated by the devil!

We have stated that all contagious diseases are produced by specific poisons, and that these poisons have their origin in the living blood. The number of diseases originating in this man-

ner are quite limited. Nearly all other affections, except those which have already been named as indisputably contagious, arise from deleterious or poisonous agents, which are found extraneous to the body, and from elements which do not exist in the blood, and are therefore necessarily *non-contagious*.

In my second proposition it is stated, that those diseases which are designated *Endemic*, or such as are confined to localities, and have their origin in local causes, which are more or less preventible, that these are not necessarily or ordinarily contagious, although from mismanagement and other causes they may become highly contagious. The most fruitful causes of endemic diseases are miasmatic exhalations, or exhalations arising from the decomposition of vegetable matters, or mixed masses of animal or vegetable substances, emanations from stagnant waters, from cess-pools, and from bad or imperfect drainage, the use of putrescent food, imperfect ventilation, etc. These causes may operate singly and separately, or may act in combination. By crowding together large masses of living beings in a confined atmosphere, with deficient food, such as our prisons of earlier times, and our emigrant ships of later periods, have enclosed, fevers of a malignant character are engendered, which are capable of becoming intensely contagious.

Epidemic diseases, on the other hand, differ from the specific and the endemic diseases, inasmuch as *they in themselves are never contagious*. Arising from causes which do not emanate from the bodies of the sick, but from external atmospheric influences, they are extended over the earth's surface, partially or generally, and are governed by unknown laws, over which man has no control. Not so, however, with the local or endemic causes of disease which we have just enumerated. These, such as malarious exhalations, putrescent food, foul water, offensive effluvia, and imperfect ventilation—all of which are more or less under man's control, are the poisons which engender in the system a special liability or "predisposition" to disease, and which impart to *all epidemics* their greatest potency. This relation which these two great causes of disease bear to each other is one of the highest importance. It is a subject which has recently received a large share of attention from scientific professional investigators, and which is one in which all should

be deeply interested, who regard the health and welfare of their own families, or of the communities in which they dwell.

That we may the better comprehend a subject of so much importance, we will now endeavor to explain—and will do it in as brief a manner as possible—the effect, or the *modus operandi*, of these predisposing causes upon the living body, and their connection with the great exciting cause of disease—epidemic influence.

The proposition already laid down must not be forgotten—namely, that the specific poison, from which contagious diseases arise, originates in the living blood, and that on being introduced into the circulation of a healthy individual, it there finds the same morbid material as that of which it is composed, by a fermentation of which, a reproduction ensues. Now, it is admitted by most pathologists, that the poison of epidemic diseases also acts on the blood in the manner of *ferments*. But this poison, instead of being engendered *within* the body, is always introduced *ab extra*; and, moreover, experience has established this important fact, that the presence of some special fermentable element in the blood is necessary to enable the poison of epidemics to be developed in the system. To this peculiar morbid substance, or ferment, the term *azotized matter* has been given, which is understood to be, says Dr. Carpenter, a material already in a state of putrefactive alteration, and, therefore, precisely in the condition in which it is most readily acted on by ferments.

Let it still be borne in mind that this material does not exist originally *in the blood*, like the *materies morbi* of contagious diseases, but like the poison of epidemics is always introduced from without, and as it arises from local causes which exist in our midst, may be made, if we will, subject to our control.

The presence of such a matter is absolutely requisite, in a great majority of cases, for the morbid action of epidemic poison, which poison has no direct action upon healthful blood, and the liability of each individual among a number who may be concurrently exposed to the same epidemic poison, will mainly depend upon the degree in which his blood may be charged with the matters in question.*

* Med. Chi. Review, vol. ix, p. 128.

Whenever the cholera atmosphere, for example, is conveyed to any place—and what is true of the cholera poison is true also of the poison of a large number of other epidemic diseases—its diffusion and severity among the inhabitants of that place will depend entirely upon the predisposition to the disease existing in their systems from the local causes to which I have referred. With the *origin* of these poisons, which give to epidemic atmospheres their peculiar morbid qualities, we are as yet unacquainted. We only know that “in the very same localities, and under identical circumstances, so far as can be traced, different forms of epidemic disease prevail at successive periods,” as typhoidal or typhus fever, dysentery, epidemic cholera, yellow fever, etc. But even were this knowledge attainable, could we discover the causes from which these epidemic poisons emanate, it is not probable that the extermination of the diseases which they produce could be accomplished by medicine. Like the other phenomena of nature, these are doubtless beyond our control. But although this knowledge is denied us, there has been revealed to us another truth of vast importance, one which has been established by such a mass of evidence, that we have no longer any excuse for disregarding it.

Experience and repeated observations, made in every part of the world, where epidemics have prevailed, have shown whenever, during their prevalence, any portion of the inhabitants are exposed to any one or more of the local causes, to which we have often referred—malaria, putrescent food, foul water, or atmospheric impurities of any kind, that upon those thus *predisposed* the epidemic poison, whether it be that of cholera, typhus, or yellow fever—first seize, and there manifests its highest degree of intensity.

On the other hand, all who have observed the progress of epidemic diseases are fully aware, that without any of these deleterious influences, the poison of epidemics is completely innocuous.

Viewing the matter, therefore, in this light, we have an explanation of the fact, that some localities will remain exempt from disease, frequently for years, when, without any appreciable cause, a severe epidemic will be developed. The existing local causes of disease in such places may, and often do, prevail for

several successive seasons, producing in the meantime only the endemic affections which are peculiar to the localities, or to the nature of the poison. No sooner, however, do we have the epidemic morbid influence added to the local poison, than we have developed some variety of zymotic disease, which form of disease will characterize the nature of the special agent with which that commissioned atmosphere is charged, whether it be the poison of influenza, of cholera, or of yellow fever.

The conclusions, therefore, to which we must necessarily come, from a consideration of these facts and observations, are :—

1st. That for the invasion and development of epidemic disease, the existence of two conditions is absolutely required—namely, the presence of the epidemic poison in the atmosphere—an agent not subject to man's power ; and the introduction into the system of a morbid decomposing matter, that has been generated in some external source, “and which consequently is preventable.”

And 2d. That the invasion of cholera, of yellow fever, and of other epidemics, is as effectually prevented by preventing the accumulation of azotized matter in the system, as by arresting the development of the epidemic poison itself.

If we refer to the history of cholera again, as an illustration, every medical man, who has had experience in this disease, is fully aware, that the inhalation of the foul air of our dirty lanes and cellars, the use of damaged food, or of water charged with decomposing matter, the presence of exhalations from marshy places, or from cess-pools, or imperfect sewerage, that these are among the most powerful, and certain of the predisposing causes which determine an attack of cholera. Abundant examples of this kind could be furnished, as having occurred during each visitation of the cholera in our own, and in other countries.

Another most remarkable fact that must not be forgotten in this connection, is the one admitted by Dr. Carpenter and other eminent physiologists, that “each of these causes, without a single exception, tends to induce *one and the same condition of the blood.*” The conclusion, then, seems irresistible, that this condition of the blood, in which it is charged with decomposing organic compounds, is that which is the immediate source of its

liability to be affected by the introduction of zymotic or epidemic poisons.

Now it is this last-named ally of disease, this morbid condition of the blood—a condition effected entirely by local causes over which man, through known and appropriate sanitary measures, established by legislative and municipal enactments, and executed by individual energy, has efficient and positive control.

These views are not based on theory, but on opinions founded on observations, and corroborated by the experience of many scientific observers. The Registrar-General of England, who, in the fulfilment of his official duties, has for many years enjoyed a wider opportunity for studying the nature and cause of the great epidemics of the earth than perhaps any other man—the very man who has the most cause to know the power of this pestilence, says the *Medico-Chiurgical Review*, “is he who most loudly proclaims how its career, and that of other epidemics, is to be arrested.”

“The causes of typhus, of influenza, of cholera, and the like (epidemic) diseases,” he affirms, “will not long remain in undisturbed possession of the earth and the air. * * Hydrophobia disappears, when the dogs which are liable to become mad or to be bitten, every summer are removed by police regulation; so will the other zymotic diseases give way when the putrid, decaying, noisome atmosphere, exhaled by church yards, slaughter-houses, the tanks of dirty water companies, cess-pools, sewers, crowded dwellings, is purified and dissipated. The sewers and cess-pools, now under our houses, will inflict more pains and destroy more living than ten thousand mad dogs let loose in the streets, *and may as certainly be removed.*”*

Until right views are entertained by the public guardians of the public health, with regard to the nature of the predisposing and exciting causes of disease, and the relation which these causes bear to each other; until our Sanitary Commissions, and Boards of Health, are composed of scientific members of the medical profession, with power to act independantly of party or political influences, the public will never know the amount of controlling influence man really possesses over these dis-

* *Med. Chi. Review*, vol. v. p. 223.

eases ; they will not understand, what is capable of demonstration, that it is possible, not only greatly to mitigate the severity of these epidemic visitations, but to keep the greater number of them absolutely at bay ! And this is to be accomplished, not by stretching sanitary cordons around our borders, or by establishing quarantine restrictions and regulations at our ports of entry, but by attending to those sanitary measures, well understood at the present day, and which are sternly demanded for the removal of those local causes of disease which so greatly abound in our cities.

We are no advocates of the gloomy theories of Wallace and Malthus, that Providence, for the purpose of punishing vice, and in order to set bounds to the increase of mankind, hath ordained that pestilence and famine shall, from time to time, recur, that the earth be not overstocked, and men laid under the cruel necessity of killing one another. Rather would we maintain the benevolent doctrine of Talfourd, that there exists no decree of Providence, or any insuperable obstacle, in the constitution of nature to the development of her vast and untried resources ; for, surely, " immense regions of unbounded fertility, long successions of spicy groves, trackless pastures, watered by ocean, rivers, formed to let in wealth to great continents, and islands which lie calmly on the breast of crystal seas, were not created for eternal solitude and silence. Until these are peopled, and the earth is indeed 'replenished and subdued,' the command and the blessing, 'increase and multiply,' must continue unrecalled by its Great Author."

Still, we believe, that as the tornado, the lightning, and the storm, have their appointed task, so have epidemics their destined mission, and like these, are the agents of a wise and a benevolent Creator, and are intended to effect, ultimately, a removal of those social evils which, through man's inhumanity to man, still "make countless millions mourn."

What the Registrar-General has said of cholera, may, with equal truth, be said of that pestilence which has recently visited, with such awful devastation, several of our neighboring Southern cities, and which, unless we heed the many warnings we have received, may ere long make our crowded, neglected city its quarry. Of this epidemic, he says : "It is a health inspector that

speaks in language which nobody can misunderstand ; it visits the prisoner in the hulks, on the polluted river ; the neglected lunatic in his cell ; the crowded workhouse ; the establishments for pauper children ; the sides of stagnant sewers ; the undrained city ; the uncleansed street ; the cellar and the attic, as well as the fair open quarters which strangers frequent and admire. *The oversights, the errors, the crimes of persons who, in responsible offices, have charge of the health and life of men, are proclaimed aloud by this inexorable voice !*”*

We do not entertain a doubt that when all the facts shall be known with regard to the history of this late, fearful epidemic, it will be found that the inhabitants of these doomed cities had been dwelling amidst pestilential, malarious exhalations, engendered in their own vicinities, and which, by corrupting the blood, had fully prepared the system for the certain reception and development of the epidemic poison.

The belief in the doctrine of the importation of the poison of cholera and of yellow fever is rapidly disappearing wherever, in the light of medical science, careful observations have been made ; and, although the doctrine is still maintained by multitudes, yet this constitutes no real ground for its being truthful.

“ Man,” says a quaint writer, “ is a gregarious animal in the domain of thought as well as in that of action, and thus a set of notions, supported by some external plausibilities, be it in religion, politics, philosophy, or physic, once set a going, is like a snow-ball which a boy rolls along the street, until its size becomes too great for him to move, the increase having taken place by the absorption into the mass of various unattached particles of snow with which it was brought into contact ; so with a doctrine, which goes rolling along through the world, and in its course meets with vast numbers of unattached minds—minds devoid of definite ideas on the subject thus brought into contact with them, and like the particles of snow, they give in their adhesion. Nor does the parallel stop here, supposing the doctrine to be erroneous, for what a hot blast of sunshine is to the snow-ball, free and public discussion is to the doctrine—namely, the cause of its liquefaction and dispersion.”†

* Med. Chi. Review, vol. v. p. 216.

† Trans. of the Prov. Med. and Surg. As., vol. xvi. pp. 83-4.

I have thus, gentlemen, endeavored, in as brief a manner as possible, by interrogating the revealed laws which govern the origin and propagation of contagious disorders, and by inquiries into the nature and influence of the predisposing and exciting causes of epidemic visitations, to show what control man may exercise, if he will, over the diffusion of these destructive forms of disease.

Of the changes demanded in our sanitary regulations to ensure protective measures, it is of course impossible, on an occasion like the present, to treat. Contagious diseases demand isolation—the separation of the affected from the healthful—but not quarantine restrictions. How entirely useless and absurd it must be for a community to attempt to bar out contagious affections by quarantine regulations, when all this class of diseases may be found, at all times, more or less existent in the midst of every large community? Over the laws which govern the diffusion of the poison of epidemics, man, as we have already seen, can exercise no control. But not so with the local causes of disease, from which emanate those decomposing matters whose introduction into the system imparts to all epidemics their greatest potency. Let those sanitary regulations be instituted, and carried out in the broadest and most comprehensive manner which look to a thorough and radical improvement of the condition of the poor, and to a removal of all those ills and imperfections in our social conditions, which are so manifestly indicated, on the occurrence of any epidemic, as being the special agents of disease—let all those improvements which are now demanded by medical science, for the welfare of humanity, be faithfully accomplished by appropriate legislative enactments and energetic municipal regulations, and the hitherto fatal epidemic will be robbed of its power. Do all this, you who stand as the public guardians of the public health, and you shall have complied thereby with the great requirement of Divine Benevolence, to “do unto others as ye would that others should do unto you.” Do this, and you shall have stamped the lintels and the side-posts of your own dwellings with the Paschal sign of mercy, and the destroyer will not be suffered to come in unto your houses to smite you or yours!

In conclusion, gentlemen of the medical class and of the med-

ical profession, let me again impress you with the importance of making yourselves thoroughly acquainted, not only with the laws of disease, but with the nature of those sanitary measures which are required for the protection of all large communities.

On you who are, and who are to be, members of our profession, will devolve the responsible labor of urging on, and of administering Sanitary Reform. In accomplishing this—and no other body of men, says the *Medico-Chirurgical Review*, can do it—the medical profession “will be fulfilling the most important duties which any class of men have ever rendered to a State in the history of the world. They will be indeed realizing the prediction of Descartes, who saw, in the unfolding of medical science, the amelioration of mankind. They will convince even those miserable skeptics, who dare to sneer at medical science because it cannot cure, like a God, those diseases which the self-indulgence, the sensuality, and the brutality of years have induced, or to remedy, as by a miracle, those ills which the neglect and cruelty of men have inflicted on their fellow men—they will convince even these detractors of a noble calling, that medical science, which had its birth in the weaknesses and necessities of the human race, is as the light arising out of darkness, which itself destroyed that from which it sprung!”*

* *Med. Chi. Review*, vol. v. p. 226.